Washington State Department of Transportation

Memorandum

April 16, 2002

TO: John F. Conrad
MS 47316

FROM: Kevin J. Dayton/Ron Howard
705-7821/705-7823

SUBJECT: CRIPs
Contractors' Cost Reduction Incentive Proposals
Second Half, 2001 Experience

This report has been prepared to cover the six-months period from July through December, 2001.

Value Engineering in the Construction area picked up substantially during the second half of 2001. The number of proposals approved during this period doubled over the number in the previous six months, and the savings to the State increased fivefold. We continue to pursue some savings in this arena, but at a very much slower pace. We are looking at only five additional proposals with a combined value of no more than $100,000.

The results are as follows:

Period	Approved	Savings to the State	Removed from List
July – December, 2001	**12 proposals**	**$562,547**	**1 proposal**

These are the actual savings of the proposals in terms of money. Three of these approved ideas also included reductions in contract time. Reduced durations save administrative costs for both WSDOT and the Contractor and provide a major benefit to the traveling public. All of these proposals also include a transfer of the constructibility risk from WSDOT to the Contractor. These risk transfers, together with the evidence of teamwork and partnering that CRIPs represent, provide intangible benefits in addition to the face value of the proposals.

By comparison, CRIP savings in the second half of 2000 were $598,911 and $181,777 in the first six months of 2001. Looking to the future, we are currently reviewing 5 CRIPs

with potential savings of approximately $100,000.

A description of the accepted CRIPs and their potential application to future designs is attached.

In view of the reduced level of CRIP activity in the past two or three years, we have decided to abandon the semi-annual frequency of this report. In the future, CRIP results will be reported annually, to coincide with the Department's annual report on Value Engineering in October. The next report will cover the period January thru September, 2002.

KJD/RH:cd
Attachments (report and spreadsheet)

cc/att: Don Mathis, FHWA, 40943
Tony Allen, 47365
Jugesh Kapur, 47340
Don Nelson, 47324
Harold Peterfeso, 47330
Toby Rickman, 47344
Rick Smith, 47325
Jim Walter, 47365
Ralph Robertson, Eastern Region
Bill Stokes, North Central Region
Ron Paananen, NW Region, NB82-240
Jerry Walter, Olympic Region, 7440
Phil Nickson, South Central Region
Doug Ficco, Southwest Region, S-15

APPROVED CRIPS – 2nd HALF, 2001

REVISED STAGING SAVES TIME AND DOLLARS

(C-5688, C.O.71)

This contract includes the reconstruction of SR 525 north of Lynnwood, near its intersection with SR 99. The plans called for a four-stage traffic plan, moving 2-way traffic back and forth across the median and allowing various construction activities, including cast-in-place median barrier at the south end of the project. The Contractor observed that the median barrier could be constructed in an earlier stage, eliminating the need for later traffic changes, if the existing pavement was temporarily widened. This revision reduced the monetary cost of the later stages and, most important, reduced the duration and nature of the adverse affects on public traffic. The proposal saved nearly $64,000, half of which reverted to the State, and reduced the time for completion by nine working days. On first review, it appears that this approach could have been identified during design and included as a plan requirement. Future design work could look at adding temporary facilities where they could do this kind of good.

EARTHWORK REVISION REDUCES EXCAVATION

(C-5711, C.O.89)

This project is a reconstruction of SR 395 north of Spokane. Included in the work was the relocation of a retention pond previously constructed on adjacent private property. The correction involved mostly excavation on the private land. The Contractor was able to reach agreement with the property owner to leave the material in place and delete its excavation. This resulted in savings of over $50,000 with the State's share at $25,445. The Contractor was not restricted by the same rules governing our right-of-way dealings and could get this agreement done. It would not have been possible for WSDOT to reach the agreement during design and avoid including the work in the contract.

LIGHTWEIGHT FILL MATERIAL CHANGE YIELDS BIG SAVINGS

(C-5833, C.O.36)

This grade separation project on the Port of Tacoma Road between Tacoma and Fife was designed to be constructed on a foundation of very soft material. The original design of the fill utilized a foam product similar to Styrofoam, but stronger and with a more controlled manufacturing process. This "Geofoam" material was quite expensive. The Contractor employed a consultant to investigate alternative approaches that might be cheaper. This engineer discovered a "bottom ash" by-product of the Centralia coal-fired electricity generating plant. The ash material was lighter than conventional gravel and nearly as strong. Using this material, the Contractor was able to propose a significant reduction in the amount of Geofoam needed. The resulting savings of over $600,000 was split with the Contractor and the State's share was just over $309,000. There is no reason to think that our designers should have found this material first, but we should consider using it in future designs for similar situations.

OPEN-CUT CONDUIT CROSSING IS LESS EXPENSIVE
(C-5935, C.O.28)

This project to reconstruct the 38th Street Interchange on I-5 in Tacoma contained electrical conduit runs under existing ramps. The plans called for jacking 12-inch casings under the ramps so that the conduit could be installed without open cuts. Since the ramp paving was to be redone under this same contract, the electrical subcontractor offered to perform an open cut, under traffic, instead of using the casing. This approach reduced the contract cost by over $23,000, with the State's share calculated at $11,738. Carrying out this work in this manner required some careful staging and extra efforts on the part of the subcontractor. While the designer could have specified the same product, that would have required voluntary efforts by the sub which could not have been easily obtained without the collaboration demonstrated by this agreement.

ELIMINATE SHOULDER REMOVAL TO SAVE TIME AND MONEY
(C-5938, C.O.3)

This was a channelization project on SR 2 near the town of Sultan. It included the removal of an existing shoulder section and full-depth paving for widening. After a site review, the Contractor suggested using the shoulder is it was. The Contractor had performed extensive coring of the shoulder to demonstrate that an adequate pavement section existed. The State's share of the resulting savings was $22,650. This condition could theoretically have been caught in design, but should not have been. As-built shoulders do vary in depth and sometimes there is no need to remove and replace. To identify these in design would take an inordinate amount of investigation and would still be a process fraught with errors. Far better to utilize the CRIP process and allow the field personnel to identify these opportunities and take advantage of them when encountered.

CHANGE IN TYPE OF MULCH LEADS TO SAVINGS
(C-5947, C.O.69)

This contract for major work on I-90 in Spokane includes landscaping work. As part of the work, the plans called for the use of a bark mulch. The contractor suggested using a less expensive alternate (bonded fiber matrix) instead. The savings in materials and application amounted to more than $31,000 and the State's share was $16,569. In addition, a reduction of contract time in the amount of 15 working days was also realized. Use of this material could have been specified in the original design and should be considered for future projects.

APPROVED CRIPS – 2nd HALF, 2001

REVISED WALL DESIGN SAVES COST
(C-5970, C.O.12)

This project adds HOV lanes on SR 16 west of I-5 in Tacoma. Included in the overall design is a 568 meter "soil nail" wall. The Contractor proposed reducing the design values of the planned wall including a reduction in bar size, an increase in anchor spacing, and a reduction in shotcrete thickness. The alternate design was found to be adequate and the proposal was accepted. The State's share of the savings was $33,000. Clearly, this was not a product equal to that originally designed, but was accepted as accomplishing the design intent. If the consultant's design was, indeed, excessive, then we can achieve savings in this area on future designs.

DEWATERING ACCOMPLISHED WITHOUT SEAL
(C-6037, C.O.4)

This project in north Lynnwood improves SR 525 northerly from its interchange with I-5. Bridge footings are included in the design, which addresses water in excavations through the use of concrete seals. At two locations, the Contractor proposed to dewater by pumping and dealing with the pumped water. This alternate method allowed the deletion of the seal concrete at a net savings of $7,250. The State compensated the Contractor with 50% of these savings. This alternate method is well-known, and its use was possible in the original design. The success of pumping depends on a willing and enthusiastic effort by the contractor. Allowing this Contractor to propose the alternate method and share in the savings created an unwritten, but significantly motivating desire on his part to make the proposal work out. It is not recommended that we design without seals in marginal ground water conditions.

CONTRACTOR AGREES TO WORK WITHOUT HAUL ROAD
(C-6037, C.O.2)

The same project on SR 525 also included provisions for a haul road, constructed of shoulder ballast, to be placed on the raw subgrade. This was intended for protection from dust and water pollution and would have been a convenience to the Contractor in the hauling effort. The Contractor believed that a careful approach to the work and high levels of scrutiny of resulting pollution could allow completion of the work without the temporary haul road. The resulting change reduced the contract amount by over $44,000, with the State's share at $22,140. This proposal required significant personal commitments from the Contractor's field personnel and could only have been successful in this forum of a compensated CRIP proposal. Future designs should continue to include haul road provisions.

APPROVED CRIPS – 2nd HALF, 2001

EXTRA CLOSURE OF HIGHWAY 99 IN SEATTLE AVERTED
(C-6065, C.O.2)

This project called for the removal of a pedestrian structure across SR 99 in South Seattle. The contract provisions allowed a full closure of this busy highway to accomplish the work. After award, the State also entered into an emergency contract for repairs to the nearby Alaskan Way Viaduct. The Lander Street contractor determined that, with some accelerated effort, his closure work could be conducted during an Alaskan Way closure. This resulted in traffic control savings on Contract 6065 from which the State took a share amounting to $21,555. This proposal is an excellent example of the value of the CRIP program. It would have been near-impossible to forecast this confluence of closure needs during design. (Probably completely impossible, considering that the adjacent project was done on an emergency basis.) Even had the possibility been recognized, the provisions to carry it out on a unilateral basis would have been difficult and, probably, unenforceable. The Contractor's willing effort to make contact with the adjacent project and to adjust his own schedule to allow the concurrent work could only have happened in this type of incentive environment.

AVOID DETOUR WITH SHORED EXCAVATION
(C-6102, C.O.1)

This project on SR 2 near Leavenworth included three culvert replacements across the Stevens Pass Highway for fish barrier removal. The plan called for construction of detours, exposing the existing roadway for excavation and drainage work. The detours would have encroached on an adjacent stream as well as creating a traffic impediment. The Contractor did some minor test digging and concluded that sheet piles could be installed. This allowed a controlled excavation that permitted one-way traffic on the existing alignment. The State's share of the resulting savings amounted to over $11,000. While there is constructibility risk involved with this type of shoring design, it should work well in areas of sandy gravels. We recommend that this sheet pile shoring method be considered for future projects where that type of material is expected.

APPROVED CRIPS – 2nd HALF, 2001

SIGNIFICANT SAVINGS IN WORK METHOD CHANGE
(C-6137, C.O.11&12)

This project on I-405 through Bellevue and Kirkland included repairs on three damaged culverts. The plans called for isolating the work area with barrier and performing replacements of the damaged pipes. The Contractor proposed a bold change in traffic control. Instead of closing off a work area, the work would be done on weekends and off-peak times by closing the inside (HOV) lane and working in segmented shifts. The proposal also contained revisions to the nature of work whereby only the damaged portions of one pipe were replaced and another line was placed through a core-drilled opening in the existing barrier. The resulting net savings in traffic control and the direct cost of the work was nearly $110,000, with the State's share coming in at $53,336. In addition, the proposal included a 15-day time reduction with the accompanying savings to the traveling public. This approach was available to the designers, but we do not assert that the plans should have been drawn this way or that future designs should utilize such an approach. By specifying the rigid coordination that would be necessary, we invite contrary response to any vagaries in the environment. By using a "repair" procedure instead of full replacement, we warrant the existing conditions and take responsibility for anything that doesn't work out. This act of the Contractor, in putting forth an alternate proposal, puts the "proof of the pudding" on his plate. That's where we like to see it.

REMOVED FROM LIST – 2nd HALF, 2001

SMALL SAVINGS IN BRIDGE SUBSTITUTION DID NOT WARRANT THE CHANGE

The Contractor on a reconstruction project on SR 18 proposed deleting the planned box girder bridge and replacing it with prestressed "super-girder" construction. While structurally acceptable on its face (we did not pursue the design far enough to confirm this), the resulting savings were going to be quite small. Taking on all of the potential related problems of this hurry-up design was not justified by the minor amount of savings offered. The work went forward as planned.